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EXAMINER	
ALBERTALLI, BRIAN LOUIS	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,106	VILLEMOES ET AL.	
	Examiner	Art Unit	
	BRIAN L. ALBERTALLI	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-19 and 22-24* is/are rejected.

7)☒ Claim(s) *2,20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states,

"the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-19, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. (U.S. Patent 5,890,125), in view of Brandenburg et al. (EP 0466037).

In regard to claims 1, 11, and 24, Davis et al. disclose a method, audio encoder, and computer program product (Fig. 4) for encoding an audio signal, the audio signal including a first audio channel and a second audio channel, the method/encoder comprising the steps of/means for:

subband filtering each of the first audio channel (input signal 1) and the second audio channel (input signal 2) in a complex modulated filterbank to provide a first plurality of subband signals for the first audio channel (channel subband signals 11 and 12) and a second plurality of subband signals for the second audio channel, channel subband signals 21 and 22, column 5, lines 56-67 and column 6, lines 53-65),

downsampling each of the subband signals to provide a first plurality of downsampled subband signals and a second plurality of downsampled subband signals (the subband filtering includes QMF filters which downsample the resulting subband signals, column 6, lines 53-65),

deriving spatial parameters from the downsampled subband signals that are not further subband filtered (spatial coder 40 generates spatial characteristics based on the subband signals, column 6, lines 13-21), and

deriving a single channel audio signal comprising derived subband signals derived from the first plurality of downsampled subband signals and the second plurality of downsampled subband signals (composite signal 161, column 7, lines 36-47).

While Davis et al. disclose any applicable technique may be used to determine the subband signals (column 6, lines 53-65), Davis et al. do not disclose further subband filtering at least one of the downsampled subband signals in a further filterbank in order to provide a plurality of sub-subband signals, and deriving spatial parameters also from the sub-subbanded signals.

Brandenburg et al. disclose a method/encoder for deriving subband signals wherein subband signals are further subband filtered in a further filterbank in order to provide a plurality of sub-subband signals (see Fig. 2 and page 3, lines 29-49).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Davis et al. to further subband filter the downsampled subband signals to provide a plurality of sub-subband signals and derive spatial parameters from the further sub-subbanded signals, because using such a filtering technique provides a

computationally efficient filter bank with high frequency resolution, as taught by Brandenburg et al. (page 3, lines 3-5).

Furthermore, as illustrated above, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 3, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filtering is performed on at least the lowest frequency subband signal of the first plurality of downsampled subband signals and on the lowest frequency subband signal of the second plurality of downsampled subband signals (Fig. 2, further subband filtering 213 on the 0-3 kHz subband, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of

Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 4, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filtering is further performed on at least the next lowest frequency subband signal of the first plurality of downsampled subband signals and on the next lowest frequency subband signal of the second plurality of downsampled subband signals (Fig. 2, further subband filtering 212 on the 3-6 kHz subband, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 5, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the number of sub-subbands in the lowest frequency subband signals is higher than the number of sub-subbands in the next lowest frequency subband signals (128 frequencies by subband filtering 213 as opposed to 64 frequencies by subband filtering 212, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 6, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filterbank is at least partially a complex modulated filter bank (classical DFT, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of

Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 7, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filterbank is at least partially a real valued cosine modulated filter bank (MDCT filter, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 8, Davis et al. do not disclose further subband filtering, but disclose oddly-stacked filter banks could be used as a filter (column 6, lines 53-65). Brandenburg et al. disclose further subband filtering (page 3, lines 36-49).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Davis et al. to apply an oddly-stacked filter bank for further subband filtering, because further subband filtering provides a computationally efficient filter bank with high frequency resolution, as taught by Brandenburg et al. (page 3, lines 3-5).

In regard to claim 9, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the sub-subband signals are not further downsampled (see Fig. 2 and page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 10, Davis et al. disclose the single channel audio signal is bandwidth limited and further coded (composite signal 161 is subjected to data compression, column 7, lines 45-47) and wherein spectral band replication parameters are derived from the first plurality of downsampled subband signals and/or the second

plurality of downsampled subband signals (spatial characteristics are derived from the channel subband signals, column 6, lines 13-21).

In regard to claim 12, Davis et al. disclose an apparatus for transmitting or storing an encoded audio signal based on an input audio signal, the apparatus comprising:

an input unit to receive an input audio signal (Fig. 4, inputs 10-30, column 5, lines 56-67),

an audio encoder as claimed in claim 11 for encoding the input audio signal to obtain an encoded audio signal (see rejection of claim 11, above),

a channel coder to further code the encoded audio signal into a format suitable for transmitting or storing (formatter 50 assembles the encoded audio signal for transmission or storage, column 6, lines 27-34).

In regard to claims 13 and 22, Davis et al. disclose a method and decoder for decoding an encoded audio signal, the encoded audio signal comprising an encoded single channel audio signal and a set of spatial parameters, the method/decoder for decoding comprising the steps of/means for:

decoding the encoded single channel audio channel to obtain a plurality of downsampled subband signals (Fig. 5, the single channel signal 501 is input and subband signal generator 520 decodes the signal into subband signals corresponding with those encoded at the encoder, i.e. downsampled QMF signals, column 7, lines 50-59) and column 8, lines 16-19), and

deriving two audio channels from the spatial parameters and those downsampled subband signals that are not further subband filtered (output signal 561 and 571, column 7, line 59 to column 8, line 6).

While Davis et al. disclose any applicable technique may be used to determine the subband signals (column 6, lines 53-65), Davis et al. do not disclose further subband filtering at least one of the downsampled subband signals in a further filterbank in order to provide a plurality of sub-subband signals and deriving the two audio channels from those sub-subband signals.

Brandenburg et al. disclose a method/encoder for deriving subband signals wherein subband signals are further subband filtered in a further filterbank in order to provide a plurality of sub-subband signals (see Fig. 2 and page 3, lines 29-49; the same filterbank is used in the decoder, page 6, lines 11-22).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Davis et al. to further subband filter the downsampled subband signals to provide a plurality of sub-subband signals and derive spatial parameters from the further sub-subbanded signals, because using such a filtering technique provides a computationally efficient filter bank with high frequency resolution, as taught by Brandenburg et al. (page 3, lines 3-5).

Furthermore, as illustrated above, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of

substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 14, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filtering is performed on at least the lowest frequency subband signal of the first plurality of downsampled subband signals and on the lowest frequency subband signal of the second plurality of downsampled subband signals (Fig. 2, further subband filtering 213 on the 0-3 kHz subband, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 15, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filtering is further performed on at least the next lowest frequency subband signal of the first plurality of downsampled subband signals and on the next lowest frequency subband signal of the second plurality of downsampled subband signals (Fig. 2, further subband filtering 212 on the 3-6 kHz subband, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 16, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the number of sub-subbands in the lowest frequency subband signals is higher than the number of sub-subbands in the next lowest frequency subband signals (128 frequencies by subband filtering 213 as opposed to 64 frequencies by subband filtering 212, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 17, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filterbank is at least partially a complex modulated filter bank (classical DFT, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 18, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the further subband filterbank is at least partially a real valued cosine modulated filter bank (MDCT filter, page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 19, Davis et al. do not disclose further subband filtering; however, Brandenburg et al. disclose the sub-subband signals are not further downsampled (see Fig. 2 and page 3, lines 36-49).

Thus, Davis et al. and Brandenburg et al. include each element claimed, the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. One of ordinary skill in the art could have combined the elements by known methods of substituting the filter of Brandenburg et al. for the subband signal generators of Davis et al. and each would

perform the same function as they would separately. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination would have predictably provided increased frequency resolution (from the filter of Brandenburg et al.) in the coding apparatus of Davis et al.

In regard to claim 23, Davis et al. disclose an apparatus for reproducing an output audio signal (Fig. 5), the apparatus comprising:

an input unit for obtaining an encoded audio signal (input path 501, column 7, lines 50-53),

an audio decoder as claimed in claim 22 for decoding the encoded audio signal to obtain the output audio signal (see rejection of claim 22, above), and

a reproduction unit, such as a speaker or headphone output, for reproducing the output audio signal (reproduction on a playback system, column 13, lines 23-25 and lines 47-49).

Allowable Subject Matter

4. Claims 2 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In regard to claim 2, Davis et al. and Brandenburg et al. do not disclose or suggest adding together the sub-subband signals after scaling and/or phase rotation to form a new subband signal.

In regard to claim 20, Davis et al. and Brandenburg et al. do not disclose or suggest performing, in the lowest frequency subband, phase-modifications to the sub-subband signals having a negative center center-frequency in the time domain.

In regard to claim 21, Davis et al. and Brandenburg et al. do not disclose or suggest the encoded audio signal comprises spectral band replication parameters wherein a high frequency component is derived from the spectral band replication parameters.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ogata et al. (U.S. Patent 5,926,791) disclose a sub-subband filtering technique. Liljeryd et al. (U.S. Patent 6,680,972) disclose spectral band replication coding. Dolby (U.S. Patent 6,016,473) discloses an additional directional coding technique. Breebaart et al. (U.S. Patent 7,181,019) is an intervening reference that discloses parametric spatial audio coding.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN L. ALBERTALLI whose telephone number is (571)272-7616. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BLA 5/1/08

/David R Hudspeth/

Supervisory Patent Examiner, Art Unit 2626